



# UNIVERSITY OF CALIFORNIA.

## AGRICULTURAL EXPERIMENT STATION.

BERKELEY, CAL.

E. W. HILGARD, Director.

BULLETIN NO. 81.

### *Distribution of Seeds and Plants.*

The interest manifested in last year's distribution and in reporting to us the results attained with seeds and plants furnished, is ample testimony to the popularity and value of this branch of the work of the Station. In answer to the announcement made in Bulletin 76 (Dec. 10, 1887,) there were received applications for 3992 packages of seeds and plants, and the material on hand enabled us to send out 3082 parcels. Applications are filled in the order of their receipt so long as supplies last, and those desiring to volunteer as local experimenters should apply as soon as they see this announcement. As a rule we are obliged to restrict the distribution to residents of California, but if the amount of material admits of it we send to experimenters in other States when the information to be gained from such distribution promises to be valuable.

In answer to a circular request sent out last August, we have received several hundred letters which await compilation for our next annual report. Many of them contain notes of much moment. If those who have not yet reported on seeds and plants sent them, will do so at once, the data will arrive in time for use. As has been explained in previous bulletins, this distribution is made for the purpose of ascertaining the adaptation and practical value of the several kinds of culture-plants in the different climates and soils of the State; and persons receiving them are requested to report results, whether success or failure, and if the latter, from what apparent causes.

*Terms.*—As there is no appropriation available to meet the expenses of packing and postage, applicants are requested to send the amount specified in connection with each description below. If they desire seeds sent by express, applicants need not send the amounts specified for postage, but all orders for seeds by express must be accompanied by a remittance of ten cents to pay for packing. Applications may be made for one or more kinds of seeds. In case any kind of seed becomes exhausted, the money sent will be returned unless a second

choice is mentioned by the sender. Our charges for package and postage are reduced this year because of the reduction of postage on seeds sent by mail.

Plants will be forwarded by express (*charges to be paid by receiver*) in lots consisting of the number hereinafter mentioned for each kind, on remittance of 25 cents for each lot of plants, and, where more than one kind is ordered, ten cents additional for each additional lot, to pay expenses of packing, etc. Postal notes are requested instead of stamps whenever practicable. Any surplus left after filling orders will, as far as possible, be returned to the senders, deducting letter postage.

#### Grasses and Forage Plants.

*Japanese Wheat-Grass.*—This is a grass new to science and to cultivation on this continent. Hearing that there was being grown and highly esteemed in New Zealand, a grass which had been introduced from Japan, we applied to W. Goldie, Domain Curator at Auckland, for seed, which he kindly sent us in 1886. The growth of the grass in our experimental plats convinced us of its value for this State. Specimens sent for identification to Dr. George Vasey, U. S. Botanist, resulted in his determination of it as a new species, which he will name *Agropyrum Japonicum*. Dr. Vasey concludes from the specimen we sent him that it may be valuable for pastures. Such is its record in New Zealand, where it is described as a strong and vigorous grower, stooling rapidly and abundantly, but little affected by drouth, and exceedingly hardy, producing a reasonable growth all the year round in the Auckland district. Its growth in Berkeley agrees closely with its New Zealand record, and we are desirous of having it carefully tried in all parts of the State. It seeds freely and growers can soon provide themselves with seed from a small garden-bed, in which we advise them to sow it at first. We will send the seed in small packets at 2c. each.

*Hairy-flowered Paspalum.*—The behavior of



this grass in maintaining protracted growth without irrigation on the Station grounds also commends it for wider trial. Dr. Vasey describes it as *Paspalum dilatatum* (syn. *ovatum*), and it is a native of the Southern States and of South America. It grows in tufts, attains considerable size, and makes a good leafy growth; roots very strongly, and when started well will, we believe, maintain itself on quite dry land, as it does in Western Louisiana and Texas. We desire to have it tested in all situations that its adaptations may be determined. Small packets of seed, 2c. each.

*Texas Blue Grass* (*Poa arachnifera*).—This grass is a relative of the popular lawn grass, Kentucky blue grass, but though resembling it in color and leaf, is of much more robust and vigorous habit, rooting many times deeper. It is specially commended at the South as a good winter grass, starting early and growing well, making a winter growth as satisfactory as is that of Kentucky blue grass in the summer. It is possible that it may be found valuable here when alfalfa is dormant. The seed has been distributed to a certain extent in this State, but it has proved exceedingly difficult to get a stand. We have secured a supply of root sets from Texas, which we will send in small parcels at 4c. each by mail. By planting a small plot in this way the grower will soon have roots to plant a large area if the grass commends itself.

*Tall Out Grass* (*Arrhenatherum avenaceum*; syn. *Avena elatior*).—This is another highly praised grass at the South. Dr. Phares of the Mississippi Agricultural College describes it as "adapted to a great variety of soils, making a large growth and having an abundance of perennial, long fibrous roots, penetrating deeply in the soil, enabling it to resist drouth and cold and to yield a large amount of foliage winter and summer." Such a record warrants its wider trial in this State. Seed in small packets; 2c. each.

*Schrader's Brome Grass* (*Bromus unioloides*). Latest reports of this grass, which we have distributed for several years, warrant all commendation we have given of it. Our forthcoming annual report will contain a sketch of its wide success in this State—supplementary to its record as described in our report of 1887. We desire its wider dissemination. Seed in 4-cz. packets; 4c. each.

*Hungarian Brome Grass* (*Bromus inermis*).—This grass is also showing special adaptations to California conditions. On the station grounds we note a heavy growth and a quick start after cutting and after fall rains. We have also reports favoring it from other growers. It should be more widely tried. Seed in 4-cz. packets; 4c. each.

*Esparsette or Sainfoin* (*Onobrychis sativa*).—This old leguminous plant, long a standard forage growth in Europe, has been recently tried here and there on dry lands in California and Nevada, and is very highly commended. It is a deep rooting perennial plant, and is said to be a great success on poor, dry and pervious soils without irrigation—conditions which are not favorable to the growth of alfalfa and other clovers. Sainfoin is partial to sandy or gravelly calcareous soils and is not usually satisfactory on heavy clay, such as exists on our experimental grounds at Berkeley, where it has been

grown for many years. It is an excellent hay plant. Fed green, it is said not to bloat cattle. It is quite hardy, but usually makes rather a small growth the first year. Seed in 4-cz. packets; 4c. each.

*Snail Clover* (*Medicago turbinata*).—An annual starting in to grow early, making a dense growth and covering the ground thickly with pods twice the size of burr-clover pods and smooth, so that they will not cling to the wool of sheep. Preliminary trials indicate considerable value. Seed in 4-cz. packets; 4c. each.

*Black Medic* (*Medicago lupulina*).—The growth of this plant without water, in the University garden, and in other situations where it has taken root, commends it highly for wider trial. It is a persistent grower, and makes a deep and dense mat of foliage. Seed in 2-cz. packets; 2c. each.

*Tagasate* (*Cytisus proliferus albus*).—This is a leguminous shrub from the Canary islands, where it furnishes much pasturage on dry hillsides. In the University garden it has grown to 15 feet in height, and is apparently overgrown under too kind conditions, though it has had no water. It should be tried on dry hillsides, where it may prove more nearly what Baron Von Mueller describes it: "A tall herb, recommended as a fodder plant in countries exposed to drouth." We would especially like to have it tried on sheep and goat ranges. Pour hot water on seed and let stand 12 hours before planting. Seed in 2-cz. packets; 2c. each.

*Salt Bushes* (*Atriplex* sp.).—Our report of 1887 (p. 93) contains quite contradictory reports as to the value of these plants, which are especially recommended for saline soils; but they are not restricted to such situations. They are found to be of great value in Australia in wild pastures, and some California growers speak well of them. We have a good lot of rooted plants, apparently of three species (undetermined); a, a low spreading bush and rapid grower, covering the ground the first season, without irrigation; b, stiff and upright in its habit; c, low and spreading, not covering the ground so well as a, but much finer in quality. We will send in lots of 15 rooted plants (five of each kind) by express; charge for packing, 25c. They should be planted on any wild pasture to test their value.

*Jersey Kale*.—A tall-growing collard largely used for forage on Jersey island, whence the seed was brought by S. Wakeham of Berkeley. The plant has made a heavy growth on our grounds without irrigation, cutting at the rate of 16 tons to the acre, green. Should be tried by dairymen who have moist land available. Raise and set out like cabbage plants. Seed in 2-cz. packages; 2c. each.

*Kaffir Corn*.—Further experience approves the value of this plant for green summer feed. Starts quickly and makes a good second and third growth after cutting. Seed in 4-cz. packages; 4c. each.

**Trees and Vines.**

*English Oaks* (*Quercus pedunculata*).—The rapid growth of this tree in this State induces us to offer it again for distribution, but the oft-repeated failure with seedlings we have sent out in former years induces us to offer this year fresh acorns in place of trees. These acorns should be planted as early as possible, and very



lightly covered with mold or earth, where the tree is desired to stand, and the place marked and protected against cattle, squirrels, rats, birds, etc. Acorns in 8-oz. sacks; 8c. each.

**Cork Oak** (*Quercus suber*).—Seedlings from acorns obtained from trees about 30 years old in Los Angeles and Calaveras counties. There are now bearing cork oaks in at least five counties of the State. The failing supply abroad and the immense prospective demand for cork in this country make it a duty to plant cork oaks for the use of the coming generation. It seems a very promising investment, too, for future benefits. The tree is hardy and transplants well. Small trees, 5 to each lot, 25c. per lot by express.

**Black Wattle** (*Acacia decurrens*).—We have saved a good lot of seed of this promising tree and desire to secure its general introduction. General success is reported with seed previously sent out where the seed has been put in boiling water and allowed to stand and cool 12 hours before planting. Otherwise the seed may not germinate until the second year. The seed is small, and a 2 oz. packet properly handled should give trees for a large plantation; 2c. per packet by mail. In some cases a large amount of seed will be furnished.

**Olives**.—Though several improved varieties of the olive are now to be had from our leading nurserymen, we have a lot of *Nevadillo blanco* which we will send to those who desire a few trees to experiment with. It is a medium-sized olive of oval shape, ripening early. Three plants to each lot; 25c. per lot by express.

**Mulberries**.—Cuttings of the following kinds can be had: (1) *Multicaulis*; (2) *Alba*; (3) *Russian*; (4) *Downing's* Ever-bearing; (5) *Lhoo*; (6) *Nagasaki*. Sent in lots of 10 of a kind; 10c. per lot, or 12 cuttings assorted, 20c. by mail.

**Resistant Grape Vines**.—Cuttings of the following species of *Vitis* can be had: (1) *Ciniera*; (2) *Aestivalis*; (3) *Cordifolia*; (4) *Candicans*; (5) *Riparia*; (6) *Arizonica*; (7) *Californica*; (8) *Monticola*; (9) *Novo Mexicana*; (10) *Rupestris*; (11) *Vulpina*; (12) *Romaneti*; (13) *Spino-vitis Davidii*. Sent in lots of 10 of a kind; 10c. per lot, or a dozen assorted, 20c. by mail.

**Fruit-Tree Scions**.—The University orchard contains upward of 500 named varieties of fruit, and our report of 1886 contains, on pages 130 to 140, tables in which are succinctly recorded observations on apricots, apples and pears, growth of tree and quality of fruit, time of ripening, keeping quality, etc. These observations cover a series of years and indicate that some varieties are worth a trial in other parts of the State. Applicants may order any of the varieties named in the report. *We do not furnish rooted trees, but scions for grafting.* We do not send large quantities of any variety, because the object is to test varieties and not to furnish material for commercial propagation. Send 10c. for each dozen ordered.

#### Field and Garden.

**Indian Corn**.—A collection of maize received from the U. S. Department of Agriculture included some varieties which did very well even

under the local conditions of Berkeley, which are not at all suited to this grain. We distribute them to be tested in other localities better adapted to corn-growing. The varieties are as follows:

**Field or Ensilage Corn**.—(1) Breck's Boston Market; (2) White Giant Normandy; (3) New Hickory King; (4) Golden Beauty; (5) Champion; (6) Early White Pearl.

**Sweet Corn**.—(1) Improved Evergreen; (2) Perry's Hybrid; (3) Egyptian.

Each variety in 4-oz. packets; 4c. each.

**Squashes**.—The following are grown from Department seed and have proved excellent here: (1) Early Bush or Patty Pan, a good summer squash which can be grown quite close in the rows, as it does not throw out runners; (2) Japan squash, an excellent late variety, regarded by some as superior to the Hubbard. Seed of each kind in 1-oz. packets; 2c. each.

**Beans**.—(1) Extra early six weeks, a very good early variety; (2) Fall Mount d'Or, excellent; (3) Improved Valentine; (4) Refugee; (5) Frijole Greego; (6) Painted Lady, chiefly ornamental. Seed of each in 2 oz packets; 2c. each.

**Peas**.—(1) Mallo; (2) French lentils; (3) Chick peas. Seed in 2 oz packets; 2c. each.

**Spinach**.—New Zealand (*Tetragonia expansa*); described by Von Mueller as a good culinary herb and as useful for restraining drifting sands. Seed in 1-oz. packets; 2c.

#### Fiber Plants.

We offer again the fiber plants of which quite a number were sent out last year:

**New Zealand Flax** (*Phormium tenax*).—Grows well in the coast regions of the State. Valuable for tying plants, vines, etc. Five plants to the lot; 25c. per lot by express.

**Esparto Grass** (*Stipa tenacissima*). Grows well on sandy beaches within reach of salt water, and in some other situations. Used for cordage, basket-weaving and paper-making. Ten plants to the lot; 25c. per lot by express.

**Ramie** (*Boehmeria candicans*).—The famous "China grass." Several processes are now being advocated as successful in extracting the fiber, and some foresee an important industry resulting therefrom. Ten plants to the lot; 25c. per lot by express.

#### Miscellaneous.

**Dyer's Madder** (*Rubia tinctoria*).—The report of the efficacy of ground madder root when applied to vine roots for phylloxera may induce some to grow the plant for experiment in that direction. The leaves are said to be good for forage. Seed in small packages; 2c. each.

**Pyrethrum** (Insect Powder plant). The Dalmatian (*cinerariæfolium*) and Red (*roseum*) in 2-oz. packages; 2c. each.

**Bamboos**.—A few applicants can be furnished with rooted plants of the *Metake* and *Thamnochalamus spathiflorus*, one of each kind in a lot; 25c. per lot by express.

N. B.—All applications for seeds and plants should be made as early as possible. We expect to send out seeds about January 1st and plants about February 1st. All applications should be addressed to

E. J. WICKSON,  
Berkeley, Cal.

December 10, 1888.